Tennessee Department of Environment and Conservation
Division of Underground Storage Tanks
Office of the Director

Regulatory Interpretive Memorandum

DATE: October 30, 2001

TO: All UST Division Staff

FROM: Wayne Gregory

SUBJECT: Corrosion Protection (CP) of Fill Pipes

QUESTION:

Do the UST regulations require corrosion protection of metal fill pipes?

SCOPE OF THIS DISCUSSION

This discussion will include fill pipes ranging from a vertical fill pipe connecting a fill port located directly above a tank with that underground storage tank to a long, sloping fill pipe connecting a remote fill port with an underground storage tank. This discussion will also include fill pipes with drop tubes.

DISCUSSION & ANALYSIS

This RIM (Regulatory Interpretive Memorandum) is being written because there is not a consensus of opinion on the question posed in this RIM. One point of view is that CP is not required on any fill pipe. The opposing view point is that CP is required on all fill pipes. A third view point is that CP should only be required if the fill pipe is non-vertical.

In evaluating this question both state and federal regulations have been examined, with pertinent portions of state rule being collated in this document along with a note indicating whether or not the equivalent language appears in the federal rule. In addition, the discussion contained in the federal register has been reviewed for all pertinent references to the matter discussed here. Excerpts from the discussion in the federal register have also been placed in this document for easy reference.

At first glance the federal register appears to provide discussion in support of both a “yes” and a “no” answer to this question.

In the "no" column, at 53 FR 37090 (Volume 53, page 37090; September 23, 1988) fill lines are listed as examples of nonoperational components. The discussion at 53 FR 37098 states that piping used to deliver stored product must have CP. That would not include fill pipes as the product going through them would not be considered to have been stored in the transport truck, although it may have been "stored" in another tank before transport.

In the "yes" column, at 53 FR 37114 the term "underground piping connected thereto" is stated to mean all pipes through which product flows. This would include fill pipes. The discussion at 53 FR 37128 states that the federal rule requires cathodic protection of operational underground piping **and** of components that are in contact with the soil and convey product **to** the tank. 53 FR 37136 discusses the extent of CP for buried components of the UST system and states that the rule requires protection of delivery piping and that portion of the tank that routinely stores product. This discussion goes on to define "delivery piping" as piping through which product is introduced into the tank as well as delivered from the tank. As a final indication of EPA's intent, at 53 FR 37136 this discussion states that CP **is not** required for fill pipes that have a drop tube, indicating that CP **is** required for fill pipes that do not have a drop tube.

When taken as a whole, while the fill pipe might not be considered an operational component, it does convey product to the tank and is considered to be delivery piping. The **conclusion** reached after studying the federal register is that the federal regulations require CP for a fill pipe which is in contact with the soil unless the fill pipe has a drop tube. The orientation of the fill pipe is insignificant, all fill pipes (horizontal, diagonal or vertical) are required by federal rule to have cathodic protection.

State regulation has an additional definition to be considered, i.e., "routinely contains petroleum". ["Routinely contains petroleum" means those parts of the UST system designed to store, transport or dispense petroleum.] The word "transport" in this definition lines up with the discussion in the federal register. To transport as defined by Webster is to transfer or convey from one place to another. The fill pipe conveys the product from the end of the truck's delivery hose to the tank. Therefore, the requirement that piping that routinely contains petroleum and is in contact with the soil be protected from corrosion applies to fill pipes. As discussed in the federal register, if the fill pipe is provided with a drop tube such that the drop tube transports the petroleum and is therefore not in contact with the soil, then CP is not required for the fill pipe.

CONCLUSION

Both the federal and the state regulations **require** corrosion protection of a fill pipe which is in contact with the soil unless the fill pipe is provided with a drop tube.

APPLICABLE TENNESSEE PETROLEUM UNDERGROUND STORAGE TANK REGULATIONS

1200-1-15-.01(3) Definitions.

"Ancillary equipment" means any devices including, but not limited to, such devices as piping, fittings, flanges, valves, and pumps used to distribute, meter, or control the flow of petroleum to and from an UST. *[This definition is also contained in the federal regulations.]*

"Belowground release'' means any release to the subsurface of the land or to ground water. This includes, but is not limited to, releases from the belowground portions of an underground storage tank system and belowground releases associated with overfills and transfer operations as the petroleum moves to or from an underground storage tank. *[This definition is also contained in the federal regulations.]*

"Beneath the surface of the ground'' means beneath the ground surface or otherwise covered with earthen materials. *[This definition is also contained in the federal regulations.]*

"Cathodic protection'' is a technique to prevent corrosion of a metal surface by making that surface the cathode of an electrochemical cell. For example, a tank system can be cathodically protected through the application of either galvanic anodes or impressed current. *[This definition is also contained in the federal regulations.]*

"Connected piping'' means all underground piping including valves, elbows, joints, flanges, and flexible connectors attached to a tank system through which petroleum flows. For the purpose of determining how much piping is connected to any individual UST system, the piping that joins two UST systems should be allocated equally between them. *[This definition is similar to that contained in the federal regulations. The federal rule uses the term "regulated substances" instead of "petroleum".]*

"Dielectric material'' means a material that does not conduct direct electrical current. Dielectric coatings are used to electrically isolate UST systems from the surrounding soils. Dielectric bushings are used to electrically isolate portions of the UST system (e.g., tank from piping). *[This definition is also contained in the federal regulations.]*

"Pipe'' or ``Piping'' means a hollow cylinder or tubular conduit that is constructed of non-earthen materials. *[This definition is also contained in the federal regulations.]*

"Release'' means any spilling, <u>overfilling</u>, leaking, emitting, discharging, escaping, leaching or disposing <u>of a petroleum substance</u> from an UST <u>including its associated piping</u>, into groundwater, surface water, or subsurface soils. *[This definition is also contained in the federal regulations, however Tennessee added the underlined words .]*

"Routinely contains petroleum" means those parts of the UST system designed to store, transport or dispense petroleum. *[This is the only definition listed here that is **not** contained in the federal rules.]*

> "Underground storage tank" or "UST" means any one or combination of tanks (including underground pipes connected thereto) that is used to contain an accumulation of petroleum, and the volume of which (including the volume of underground pipes connected thereto) is ten percent (10%) or more beneath the surface of the ground. ….. *[This definition is also contained in the federal regulations.]*
>
> "UST system" or "Tank system" means an underground storage tank, connected underground piping, underground ancillary equipment, and containment system, if any. *[This definition is also contained in the federal regulations.]*

1200-1-15-.02(1)(b) Piping. The piping that routinely contains petroleum and is in contact with the ground shall be properly designed, constructed, and protected from corrosion as specified below: … *{requirement for new tank systems} [This requirement is also contained in the federal regulations.]*

1200-1-15-.02(2)(c) Piping upgrading requirements. Metal piping that routinely contains petroleum and is in contact with the ground shall be cathodically protected and meet the requirements of rule 1200-1-15-.02(1)(b)2.(ii), (iii), and (iv). *[This requirement is also contained in the federal regulations.]*

APPLICABLE PORTIONS OF THE DISCUSSION OF FEDERAL RULE IN THE FEDERAL REGISTER

II. F. 2. *c. Nonoperational Components.* **Nonoperational components consist of** tank bung holes, tank manholes, vent and **fill lines**, vapor recovery lines, and manifold piping (the piping used in connecting tank together). These components, all located above the top of the tank, are called nonoperational because releases from these sources do not occur under normal operating condition. …releases…only occur when the tank is overfilled or when manifolded tanks are filled through the piping connecting the tanks together. Generally, when an overfill occurs, the volume of product contained in the fill tube above the loose nonoperational component will be forced out into the environment until the product level in the UST drops below the leaking component. *(at 53 FR 37090) [The **bolding** has been added for emphasis.]*

III. A. …All tanks and attached **piping used to deliver the stored product** must be protected from external corrosion. *(at 53 FR 37098) [The **bolding and underlining** has been added for emphasis.]*

IV. B. 4. *(b) Underground pipes connected thereto* means **all** underground piping, including valves, elbows, joints, flanges and flexible connectors attached to a tank system **through which regulated substances flow**. *(at 53 FR 37114) [The **bolding** has been added for emphasis.]*

IV. B. 1. *b. (2)* …Today's rule specifically requires the corrosion protection of operational underground piping and components that are in contact with the soil and **convey product to** or from **the tank** (e.g., flexible connectors, swing joints, pipe fittings, and impact valves), whether in metallic or FRP piping runs. Nonoperational components, such as vent and vapor recovery lines, on the other hand, need not have corrosion protection because these components should never contain free liquid product, particularly under today's requirements for overfill prevention…. *(at 53 FR 37128) [The **bolding** has been added for emphasis.]*

IV. C. 2. *a. Extent of Corrosion Protection.* EPA proposed in ▪280.31(a) that all corrosion protection systems must be operated and maintained to continuously provide corrosion protection to buried metal components of the UST system. … In the final rule, EPA requires protection of delivery piping and that portion of the tank routinely storing regulated substances. … **Delivery piping is** defined as any portion of the UST system **piping through which product is introduced into the tank** or delivered from the tank. **Cathodic protection is not required for the fill pipes of tanks that have a drop tube** because the drop tube is part of the tank that **routinely contains product**. The drop tube is not in contact with the soil and thus does not require cathodic protection. *(at 53 FR 37136) [The **bolding** has been added for emphasis.]*

Dictionary Definitions

Contain is defined by Webster as **1 :** to keep within limits **:** as **a :** RESTRAIN, CONTROL **2 a :** to have within **:** HOLD **3 b :** ENCLOSE, BOUND

Dispense is defined by Webster: **1**. To deal out in portions

Dispenser is defined by Webster: one that dispenses: as **a**: a container that extrudes, sprays or feeds out in convenient units **b:** a usually mechanical device for vending merchandise

Flow is defined by Webster: **1 a** (1): to issue or move in a stream **b:** to move with a continual change of place of the constituent particles <the molasses *flow*ed slowly>

Routinely is not defined in Webster's Ninth New Collegiate Dictionary. However, routine is defined as **1:** of a commonplace or repetitious character: ORDINARY 2 : of, relating to or being in accordance with established procedure

Transport is defined by Webster: **1.** to transfer or convey from one place to another